

WHAT IS CLAIMED IS:

1. A transmitting apparatus comprising  
a front-end transmission processing unit for converting  
transmission signal into a transmission time slot; and  
a frame generator for generating a frame including a  
series of n (integer equal to or greater than 1) time slots  
and a frame guard period added to the series of n time slots  
to suppress a frame loss due to interference; and  
a back-end transmission processing unit for  
transmitting the generated frame as a radio signal.

2. A transmitting apparatus according to Claim 1,  
wherein the front-end transmission processing unit includes  
a modulator for modulating transmission information by means  
of a proper modulation scheme selected on the basis of  
electric field strength information received from a  
communication terminal to which the transmission information  
is transmitted.

3. A transmitting apparatus according to Claim 1,  
wherein the frame guard period is a non-signal period.

4. A transmitting apparatus according to Claim 1,  
wherein the front-end transmission processing unit generates

a time slot by adding a predetermined guard period to an effective symbol period.

5. A transmitting apparatus disposed in at least one of a plurality of base stations each of which has a capability of communicating, using a signal according to a predetermined modulation scheme, with a communication terminal being within an area assigned to the base station, the transmitting apparatus comprising:

a front-end transmission processing unit for converting transmission signal into a transmission time slot;

a frame generator for generating a frame including a series of  $n$  (integer equal to or greater than 1) time slots and a frame guard period added to the series of  $n$  time slots to suppress a frame loss due to interference; and

a back-end transmission processing unit for transmitting the generated frame as a radio signal.

6. A transmitting apparatus according to Claim 5, further comprising a timing generator for generating a timing signal on the basis of a GPS signal and an inter-base-station control signal for achieving synchronization among base stations, thereby precisely synchronizing the timing of frame transmission among the base stations.

7. A transmitting apparatus according to Claim 5, wherein the front-end transmission processing unit includes a modulator for modulating transmission information by means of a proper modulation scheme selected on the basis of electric field strength information received from a communication terminal to which the transmission information is transmitted.

8. A transmitting apparatus according to Claim 6, wherein the front-end transmission processing unit includes a modulator for modulating transmission information by means of a proper modulation scheme selected on the basis of electric field strength information received from a communication terminal to which the transmission information is transmitted.

9. A transmitting apparatus according to Claim 5, wherein the frame guard period is a non-signal period.

10. A transmitting apparatus according to Claim 6, wherein the frame guard period is a non-signal period.

11. A transmitting apparatus according to Claim 5, wherein the front-end transmission processing unit generates a time slot by adding a predetermined guard period to an

effective symbol period.

12. A transmitting apparatus according to Claim 6, wherein the front-end transmission processing unit generates a time slot by adding a predetermined guard period to an effective symbol period.

13. A receiving apparatus for receiving a radio signal, each frame of which includes a series of  $n$  (integer equal to or greater than 1) time slots and a frame guard period added to the series of  $n$  time slots to suppress a frame loss due to interference, each time slot including an effective symbol period and a guard period added to the effective symbol period, the receiving apparatus comprising:

a front-end reception processing unit for receiving the radio signal;

a synchronization position detector for detecting a starting position of an effective symbol period in the received signal;

a timing generator for controlling an operation timing of a functional block, on the basis of synchronization position information supplied from the synchronization position detector;

a reception windowing unit for extracting only an effective symbol period including no time guard period and

no frame guard, under the control of the timing generator;  
and

a back-end reception processing unit for reproducing  
desired information from a windowed signal supplied by the  
reception windowing unit.

14. A receiving apparatus according to Claim 13,  
wherein the frame guard period is a non-signal period.

15. A receiving apparatus disposed in a communication  
terminal for receiving a radio signal transmitted from a  
base station each of which has a capability of communicating,  
using a signal according to a predetermined modulation  
scheme, with a communication terminal being within an area  
assigned to the base station, each frame of the radio signal  
including a series of  $n$  (integer equal to or greater than 1)  
time slots and a frame guard period added to the series of  $n$   
time slots to suppress a frame loss due to interference,  
each time slot including an effective symbol period and a  
guard period added to the effective symbol period, the  
receiving apparatus comprising:

a front-end reception processing unit for receiving the  
radio signal;

a synchronization position detector for detecting a  
starting position of an effective symbol period in the



slots to suppress a frame loss due to interference, each time slot including an effective symbol period and a guard period added to the effective symbol period; and

a back-end transmission processing unit for transmitting the generated frame as a radio signal,

the receiving apparatus comprising:

a front-end reception processing unit for receiving a radio signal transmitted from the transmitting apparatus;

a synchronization position detector for detecting a starting position of an effective symbol period in the received signal;

a timing generator for controlling an operation timing of a functional block, on the basis of synchronization position information supplied from the synchronization position detector;

a reception windowing unit for extracting only an effective symbol period including no time guard period and no frame guard, under the control of the timing generator; and

a back-end reception processing unit for reproducing desired information from a windowed signal supplied by the reception windowing unit.

18. A communication system according to Claim 17, wherein the front-end transmission processing unit includes

a modulator for modulating transmission information by means of a proper modulation scheme selected on the basis of electric field strength information received from a communication terminal to which the transmission information is transmitted.

19. A communication system according to Claim 17, wherein the frame guard period is a non-signal period.

20. A communication system comprising:

a plurality of communication terminals; and

a plurality of base stations, each of which has a capability of communicating, using a signal according to a predetermined modulation scheme, with a communication terminal being within an area assigned to the base station,

at least one of the plurality of base stations including a transmitting apparatus, the transmitting apparatus comprising:

a front-end transmission processing unit for converting transmission signal into a transmission time slot;

a frame generator for generating a frame including a series of n (integer equal to or greater than 1) time slots and a frame guard period added to the series of n time slots to suppress a frame loss due to interference, each



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time slot including an effective symbol period and a guard period added to the effective symbol period; and

a back-end transmission processing unit for transmitting the generated frame as a radio signal,

each communication terminal including a receiving apparatus comprising:

a front-end reception processing unit for receiving a radio signal transmitted from the transmitting apparatus;

a synchronization position detector for detecting a starting position of an effective symbol period in the received signal;

a timing generator for controlling an operation timing of a functional block, on the basis of synchronization position information supplied from the synchronization position detector;

a reception windowing unit for extracting only an effective symbol period including no time guard period and no frame guard, under the control of the timing generator; and a back-end reception processing unit for reproducing desired information from a windowed signal supplied by the reception windowing unit.

21. A communication system according to Claim 20, wherein the transmitting apparatus further comprises a timing generator for generating a timing signal on the basis

of a GPS signal and an inter-base-station control signal for achieving synchronization among base stations, thereby precisely synchronizing the timing of frame transmission among the base stations.

22. A communication system according to Claim 20, wherein the front-end transmission processing unit of the transmitting apparatus includes a modulator for modulating transmission information by means of a proper modulation scheme selected on the basis of electric field strength information received from a communication terminal to which the transmission information is transmitted.

23. A communication system according to Claim 21, wherein the front-end transmission processing unit of the transmitting apparatus includes a modulator for modulating transmission information by means of a proper modulation scheme selected on the basis of electric field strength information received from a communication terminal to which the transmission information is transmitted.

24. A communication system according to Claim 20, wherein the frame guard period is a non-signal period.

25. A communication system according to Claim 21, wherein the frame guard period is a non-signal period.